IN THE SPECIFICATION

Please replace the paragraph beginning at page 4, line 24 with the following rewritten paragraph:

--Where more than one fault condition is possible, the method of the invention preferably includes ascribing weighting factors to define the likelihood of the occurrence of each fault. Typically the method is implemented in an on-line and an off-line phase wherein the off-line phase comprises the generation of a diagnostic program from the various inputs, outputs, and functional relationships, and the on-line phase includes diagnosis of the system using the diagnostic program. Typically, the diagnostic program involves creating an algorithm using a symbolic language like LISP or Prolog to produce a diagnostic program in a language such as SCL (Structured Control Language) or C++, which is then run on the PLC.--

B1

Please replace the paragraph beginning at page 8, line 1 with the following rewritten paragraph:

--The tabular recording of the faults and the effect is followed by the creation of the model. This is component-based wherein the various components of the system are individually considered for the relationships that can occur as well as the resultant outputs that flow from these relationships.--

B2

Please replace the paragraph beginning at page 8, line 6 with the following rewritten paragraph:

--Referring now to FIG. 2, there is illustrated a simple system, according to a disclosed embodiment. The system includes a pressure supply 210 for supplying a pressure p_MV to the system, as measured by a supply sensor 221, a magnetic solenoid valve unit 212 for controlling the flow of air from the pressure supply 210 into a piston chamber 214 to control the movement of a piston 215 in the chamber 214, and a mechanical element 216 which operatively connects to the piston 215. The piston chamber 214 also has a front portion 211 and a rear portion 213. Movement of the piston 215, in turn, results in movement of the mechanical element 216. (The input and output signals involved in the operation of the system are shown hereinbelow in FIG. 3.).--

B3

Please replace the paragraph beginning at page 8, line 23 with the following rewritten paragraph:

B4

-- setsignal_MV & p_MV & -jam_back_MV ==> pb_Z, where pb_Z is the resultant pressure increase in the rear portion 213 of the piston chamber 214.--

Please replace the paragraph beginning at page 8, line 26 with the following rewritten paragraph:

B5

--A fault relationship that includes a jam in the back position, resulting in a pressure increase in the front portion 211 of the piston chamber 214 (pf_Z), may take the form of the following:--

Please replace the paragraph beginning at page 9, line 29 with the following rewritten paragraph:

B6

--The magnetic valve unit 212, in turn, has three inputs: two of which indicate potential faults and one to set the valve unit 212 in an on or off state. The symbol jam_<u>back_MV</u> 256 indicates that the valve unit 212 is jammed in its backward position, while jam_front_MV 258 indicates that the valve unit 212 is jammed in its forward position. The symbol setsignal_MV 260 indicates whether the valve on/off switch 217 which controls the magnetic valve unit 212, is in an on or off position. Furthermore, the valve unit 212 receives the input p_MV 254 from the pressure supply component 210. Under normal operating conditions, the setsignal_MV 260 has a value of one and the magnetic valve 212 opens by exerting a force against the spring 219. This allows the air pressure from that pressure supply component 210 to be channeled to the piston chamber 214 to exert a higher pressure in the rear portion 213 of the piston chamber 214. This is denoted by an output signal on the output pr_Z 262. In contrast, when the setsignal_MV 260 has a value of zero (-setsignal_MV), the valve 212 is closed causing a higher pressure in the front portion 211 of the piston cylinder 214, resulting in an output signal pf_Z 264. These relationships can be expressed as follows:

setsignal_MV & p_MV & -jam_back_MV ==> ph_Z, and
-setsignal_MV & p_MV & -jam_front_MV ==> pf_Z,

B6 cont'd

wherein the symbol 256 (-jam_back_MV) indicates that the magnetic valve 212 is not jamming in a backward position, and symbol 258 (-jam_front_MV) indicates that the valve 212 is not jammed in a front (or forward) position.--

Please replace the paragraph beginning at page 10, line 21 with the following rewritten paragraph:

B7

-- Thus these two equations indicate normal operation of the magnetic valve unit 212. In contrast, when the valve 212 jams in its forward position under normal pressure supply conditions, then irrespective of the value of the setsignal_MV 260, a high pressure is created in the rear portion 213 of the piston chamber 214. This is represented by the following relationship:

p_MV & jam_front_MV ==> pr_Z.--

Please replace the paragraph beginning at page ~~10~~ 13, line 1 with the following rewritten paragraph:

B8

-- The component constituting the first position sensor 218 receives the first position input 272 and a fault condition input in the form of a first position sensor defect (fp_sensor_defect) 276. It also includes a first position sensor output (fp_sensor) 278. Under normal operation (-fp_sensor_defect), the sensor produces an output of one for the fp_sensor_278 when the mechanical element 216 is in its first position (fp). The corresponding relationship is as follows:

fp & -fp_sensor_defect ==> fp_sensor.--

Please replace the paragraph beginning on page 13, line 20 with the following rewritten paragraph:

B9

--The second sensor component 220 receives the second position input (sp) 274 and sensor defect input (sp_sensor_defect) 280, and emits a second sensor output (sp_sensor) 282. The sensor 220 operates in much the same way as described above for the sensor 218. Thus the following relationships may be defined: